



Health in Impact Assessments

Opportunities not to be missed

Edited by Rainer Fehr, Francesca Viliani, Julia Nowacki and Marco Martuzzi



Abstract

Prospective impact assessment as an element of “foresightedness” by now has spread around the world. There is wide agreement that, even in well developed impact assessments, human health is often not covered adequately. As a response, Health Impact Assessment (HIA) has emerged. Opinions about the merits of separate HIA differ. Clearly, the issue deserves a close look. This publication aims to provide a detailed and balanced view on “health in impact assessments”. Five key types of impact assessment, namely Environmental Impact Assessment, Strategic Environmental Assessment, Social Impact Assessment, Sustainability Assessment, and Health Impact Assessment are presented, and four key questions are being discussed: How can the various assessments contribute to promoting and protecting human health? How can further integration of health support the various forms of impact assessments? What forms of integration seem advisable? What priorities for further development? The underutilized potential of impact assessments to protect and promote health is a missed opportunity. Ways need to be found to exploit the potential to a fuller extent.

Keywords

ENVIRONMENT AND PUBLIC HEALTH
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List of abbreviations

ADB	Asian Development Bank
CBA	cost-benefit analysis
CEHAPE	Children's Environment and Health Action Plan for Europe
CSDH	WHO Commission on Social Determinants of Health
EC	European Commission
EIA	environmental impact assessment
EIS	environmental impact statement
EPA	Environmental Protection Authority
EU	European Union
FPIC	free, prior and informed consent
HIA	health impact assessment
IA	impact assessment
IBA	Impacts and Benefits Agreement
ICMM	International Council on Minerals and Metals
IFC	International Finance Corporation
IPAS	Integrated Project Approvals System
IPIECA	International Petroleum Industry Environmental Conservation Association
LNG	Liquefied Natural Gas
MCA	multicriteria analysis
NEHAPs	National Environmental Health Action Plans
NEPA	United States National Environmental Policy Act
NIBR	Norwegian Institute for Urban and Regional Research
OECD	Organisation for Economic Co-operation and Development
OECD-DAC	OECD Development Co-operation Directorate
PBA	Planning and Building Act
PEA	programmatic environmental assessments
PPP	policies, plans and programmes
SEA	strategic environmental assessment
SIA	social impact assessment
SIMP	Social Impact Management Plan
UNECE	United Nations Economic Commission for Europe
WCED	World Commission on Environment and Development
WHO	World Health Organization

Health in Strategic Environmental Assessment

By Thomas B Fischer

Executive summary

The term SEA was first used in the late 1980s. Since then, SEA has become the most widely employed notion globally for the assessment of environmental impacts of public and private decision making activities above the level of individual development projects. There are now over 40 countries with formal SEA requirements and associated legislation. In addition, there is substantial voluntary practice, and practice in developing countries driven by development banks.

Initially, SEA was understood as involving the application of a project EIA process to strategic initiatives. However, it turns out that the higher the level of the strategic action, the less applicable EIA based methods and techniques tend to be. For example, a conceptual policy which aims at developing a broad development vision for a certain area will need specific methods and techniques, possibly ones that are more discursive and qualitative, rather than quantitative approaches more frequently used under EIA procedures.

SEA is often portrayed in terms of a “framework” rather than just a process. The validity of the approach used in SEA is often seen as depending on the characteristics of the specific situation. Where SEA is more routinely applied, for example, in statutory land use planning, highly structured processes as used in EIA can lead to positive results. In situations where vested interests are not too strong and power gradients not too steep, round table approaches involving multiple stakeholders can work well.

Most SEA systems globally formulate requirements in terms of the process applied and the substantive issues addressed. Next to biophysical issues, human health is an issue which is routinely included, though, similarly to EIA, to a variable extent in terms of scope and breadth. This is true of the European SEA Directive, the UNECE SEA Protocol, as well as SEA legislation from various countries. WHO has committed itself to support the improved consideration of health in SEA. Development banks frequently ask for health to be addressed in their SEAs through the application of their Performance Standards.

So, health already plays an important role in SEA. In current practice, however, whilst physical determinants of health (for example emissions, pollution) are routinely considered, other health determinants including social and behavioural aspects are only occasionally covered.

A number of shortcomings have been observed. In many SEA systems, health stakeholders do not get engaged in SEA processes. One reason is that frequently they are not statutory consultees. Another is that health professionals are often uncomfortable about getting involved, as SEA is not a framework they are familiar with. In addition, the decision-makers for spatial and other policies, plans and programs often appear to lack comprehensive understanding of health and may, as a consequence, only consider biophysical determinants of health.

Introduction

Since the term SEA was first used in the second half of the 1980s, it has become the most widely employed notion globally for the assessment of environmental impacts of public and increasingly private decision-making activities above the level of individual development projects, at which the term EIA is commonly used. Decision-making tiers at which SEA is applied are frequently referred to as policies, plans and programmes (PPPs) (Wood & Djeddour, 1992).

*The term SEA was first used
in the second half of the
1980s*

US National Environmental Policy Act (NEPA) in 1969 established first formal requirements for environmental assessment

There is no one-fits-all approach of SEA

SEA especially influenced through European SEA Directive EC/42/2001 and UNECE Protocol on SEA

The statutory practice of conducting environmental assessments at the level of PPPs predates the establishment of the term and goes back more than another 15 years. Formal requirements for the environmental assessment of United States Federal activities were first formulated in the 1969 NEPA (Sigal & Webb, 1989; US EPA, 1970). This Act did not distinguish between different decision-making levels, but made general reference to actions for which environmental impacts were to be formally assessed. These included both, project as well as more strategic decision-making situations (Nitz & Brown, 2001). Subsequently, in the United States, assessments above the project level started being referred to as programmatic environmental assessments (PEA). To this date, PEA has remained a United States version of SEA. Whilst NEPA did not define different approaches for assessments at different application levels, it is now widely accepted that the way in which assessments are effectively conducted differs, depending on the specific situation of application (Fischer, 2001). Whilst on the one hand there are distinct differences between different types of SEA, on the other hand there are also commonalities between SEAs applied in similar situations, including, for example, the specific decision-making tier (projects, programmes, plans and policies) and the sector in which it is applied. SEA takes different forms, with regards to, for example, the assessment process, the substantive issues covered, the methods and techniques used, the acting strategies of those conducting it and the way in which different actors contribute to it. This means there is no one-fits-all approach of the instrument (Fischer, 2014; Tonk & Verheem, 1998).

Over the past decade, the development of SEA practice internationally has been particularly influenced by the European Union Directive 2001/42/EC on the assessment of environmental impacts of certain plans and programmes (commonly referred to as the “SEA Directive”; European Parliament and Council of the European Union, 2001) and the UNECE (Kiev) protocol on SEA (UNECE, 2003) to the Convention on EIA in a trans-boundary context (the Espoo Convention). The SEA Directive was published in July 2001 and had to be transposed by EU Member States by July 2004. The Directive has not only made SEA a routine application for numerous spatial and sectoral plans and programmes in the 28 EU Member States, it has also heavily influenced the development of SEA in other countries and international institutions, as well as development banks. It is likely that several thousands of SEAs have been conducted in EU Member States alone since 2004 (Fischer, 2010; EC, 2009).

The SEA protocol to the Espoo Convention entered into force in 2010. It made SEA binding for a further four non-EU European countries in addition to the 28 EU Member States which have to comply with the SEA Directive, namely Albania, Armenia, Montenegro and Serbia. Finally, formal SEA systems have also been developed elsewhere in the world, including, for example, China and the Hong Kong Special Administrative Region, the Republic of Korea, Norway, Ukraine and the Republic of Guinea-Bissau

(OECD, 2012). The United States, Canada, Australia and New Zealand have had environmental assessment requirements in place that have covered both, project and strategic decision-making levels for several decades (Dalal-Clayton & Sadler, 2000). Whilst Bhutan also introduced SEA legislation in 2002, subsequently, this was not implemented (OECD, 2012). This means that there are now over 40 countries with legal SEA requirements and associated legislation (see Box 3). Recently, some Central and South American countries have also been said to have some formal requirements in place, including the Plurinational State of Bolivia, Chile, Costa Rica, El Salvador, Guatemala, Honduras, Peru and Uruguay. However, the extent of associated SEA practice has remained unclear. Finally, there is also some substantial voluntary application and practice in developing countries which is driven by development banks and organizations (including, for example, the World Bank, the Inter-American Development Bank and the Asian Development Bank). In this context, the OECD Development Co-operation Directorate (OECD-DAC) Environet SEA Task Team which regularly surveys SEA activities in developing countries, tracked over 150 separate SEA initiatives in 2012 (Dalal-Clayton, 2013). In addition to the rapidly growing use of SEA, related research activities and outputs have also grown significantly over the past 20 years. Fischer and Onyango (2012), for example, estimated that there are now over 500 English speaking peer-reviewed journal articles on SEA. However, an analysis of 263 SEA articles revealed that only about 1% of these were explicitly dealing with health (Fischer & Onyango, 2012).

SEA by now legally established in over 40 countries all over the world

Box 3: SEA for systematically improving the consideration of health in PPP making

What is of particular importance with regards to SEA's potential for improving the consideration of health in policy, plan and programme making procedures is its statutory status in over 40 countries, based on, for example, the European SEA Directive and the SEA (Kiev) Protocol to the Espoo Convention and development bank/organization requirements in many developing countries. This means that for many initiatives there are formal requirements to use it, thus making it different from many other impact assessment instruments, which are often applied voluntarily. Negative health impacts could thus be systematically avoided in many policies, plans and programs and positive health outcomes be enhanced through SEA.

Most SEA systems globally formulate requirements for how to apply the instrument, in particular: in terms of the process and the substantive issues to be addressed. Next to biophysical issues, "human health" is an issue which is routinely included. In this context, NEPA, for example, mentions health several times, i.e. to

promote efforts which will [...] stimulate the health and welfare of man', 'assure for all Americans [...] healthful surroundings', and 'attain the widest range of beneficial uses of the environment without degradation, risk to health or safety (NEPA §102, US EPA 1970).

Furthermore, the European SEA Directive in Annex 1 specifies that "information ... be provided on ... the likely significant effects on ... human health" and that "criteria for determining the likely significance of effects"

Next to biophysical issues, human health is an issue which is routinely included in SEA

include “characteristics of the effects and of the area likely to be affected, having regard, in particular, to ... the risks to human health”. Whilst SEA legislation from some other countries also mentions health (for example the Canadian Directive refers to health in its Annex), others do not (including those of, for example, Australia, China and the Republic of Korea).

Subsequently, firstly, the evolving understanding of SEA is further elaborated on. This is done with a view as to where, when and how health may be considered. This is followed by a discussion on what aspects of health may potentially be considered in SEA. The empirical evidence produced to date of the performance of SEA with regards to improving the consideration of health is then summarized. Finally, conclusions are drawn and recommendations are given for how the consideration of health in SEA may be advanced further.

SEA – an evolving concept

Understanding of SEA has continuously evolved ever since the term was first used. This has been accompanied by a rapid growth of SEA practice and professional publications world-wide. The conceptual development of SEA has taken place in terms of various components, in particular

- the assessment process,
- the scope of substantive issues covered, and in this context the extent of integration with other assessment tools,
- contextual aspects that enable effective SEA, as well as
- the methods and techniques used and
- strategies for assessors on how to act in a specific PPP situation.

Considering the range of issues that are important for making SEA an effective decision support instrument, SEA is increasingly portrayed in terms of a “framework” rather than just a process (Fischer, 1998, 2006; Partidario, 2000). Subsequently, different SEA components are elaborated on in further detail.

SEA Process

Initially, SEA was understood as involving the application of a project EIA process to strategic initiatives (Fischer and Seaton, 2002), consisting of a number of distinct stages. It is important that these stages match those that are often said to make up an effective HIA process (see, for example, Breeze & Lock, 2001). An EIA based SEA process is presented in Box 4. Consultation and participation of statutory and non-statutory bodies (including those representing health), as well as the general public need to take place in any assessment, at least during the scoping and impact assessment stages.

Components of conceptual development of SEA

Box 4: EIA based SEA process

- **Screening:** establishing whether an assessment is necessary for an initiative, i.e. determining whether any significant environmental (including health) impacts are likely to arise as a consequence of the initiative; screening is explained further by, for example, Morris and Therivel (2001).
- **Scoping:** once an assessment has been found to be necessary, its scope needs to be determined; decisions need to be made on, for example, what baseline data are required, what alternatives should be considered, what impacts (including those on health) should be assessed, what public or private entities should contribute to SEA and what techniques and methods should be used; scoping is explained further by, for example, Fischer and Philip-Jones (2008).
- **IA and report preparation:** the assessment of environmental (including health) impacts needs to be conducted and a report needs to be prepared, which should include recommendations on the choice of alternatives, as well as mitigation and potentially compensation measures; a more comprehensive report is usually accompanied by a non-technical summary; for more information, see, for example, Fischer (2007).
- **Decision-making on the initiative:** it is crucial that at this stage, the results of the SEA are considered; ideally, the decision-maker would justify any decisions made in the light of the findings of the assessment (including what is said on health).
- **Monitoring and follow up:** once a decision has been made to go ahead with an initiative, actual developments need to be monitored; if, for example, actual impacts are found to be not in line with predicted impacts, ideally corrective action should be possible; furthermore, whether mitigation and compensation measures are actually implemented needs to be monitored; for a more in-depth discussion, see Partidario and Fischer (2004).

It is important that this process is not understood to work in a strictly top-down manner, but that feedback loops are possible, if found necessary. This means that whilst the process is organized in terms of a clear line of stages, it can work bottom-up, as well.

The views on what effective SEA processes look like have changed over the past two decades. In particular, during the late 1990s and early 2000s, post-modern communicative ideal driven debates in the planning discipline (spearheaded by, for example, Judith Innes and Patsy Healey and influenced in particular by the sociologist Jürgen Habermas) had a significant impact on the SEA community. This meant that the above described “rational” EIA process was dismissed by some as being an inadequate basis for impact assessment at strategic decision-making levels. Non-prescribed deliberative “post-modern” processes were portrayed as the way forward (see, for example, Richardson, 2005; Caratti et al., 2005). Typical assessment approaches propagated at the time included, for example, round-tables and citizen juries (Wiklund & Viklund, 2006), in which the main focus was on deliberations rather than on aiming to achieve environmentally sustainable outcomes.

However, subsequently, this — what may be called — post-modern communicative ideal, which some considered to be a panacea to overcoming environmental assessment problems, was questioned, in particular with regards to its ability to actually steer decisions towards more environmentally sustainable solutions and outcomes (Fischer, 2003). One of the main arguments brought forward was that some of the more routinely conducted plan or programme making processes were already following structured processes and that the role of environmental assessment within this context was not only to function as a platform for debate and

The process is not to work in a strictly top-down manner, but that feedback loops are possible.

SEA as a post-modern process

...but questioned regarding the ability to steer decision toward environmentally sustainable solutions

Today validity of different approaches depending on the specific situation of application of SEA

deliberations, but also to act as a change agent for more environmentally sustainable outcomes. In this context, it was suggested that SEA needed to focus as much on outcomes as on processes.

Today, some consensus has arisen with regards to the validity of different (mainly procedural) approaches, depending on the specific situation of application. In situations where SEA is more routinely applied, for example, in statutory land use and transport planning, structured EIA based processes have shown to be able to lead to some positive results in terms of making decisions more environmentally sustainable (Fischer et al., 2009). Here, it is important to remember that SEA applied according to NEPA and the European SEA Directive already follows a systematic and structured process. Furthermore, in planning situations, where all those involved in an assessment are open to different outcomes, rather than having a pre-set mind of what the results should be, i.e. in the absence of strong vested interests and some potentially steep power gradients, round table approaches have shown to work well (see, for example, Arbter, 2004). These are also decision-making situations in which independent expert opinions and reports are more likely to have some considerable impact. Finally, it has become clear that the specific cultural context may have a bearing on the way in which the instrument may be used (Fischer & Gazzola, 2006).

Scope of issues covered, level of integration and other important contextual aspects

SEA and EIA were introduced in order to address the problem of the systematic subordination of environmental aspects to economic growth paradigm related interests in policy, plan, programme and project decision-making. The original substantive focus of the instrument was therefore on bio-physical impacts, which also includes (physical) impacts on human health. Subsequently, and triggered by the emerging sustainable development agenda of the 1980s, many became convinced that SEA should include other aspects, as well. In this context, whilst some have suggested that SEA should be used as an assessment instrument which fully integrates economic, social and environmental aspects (Partidario & Moura, 2000; see also George, 2001), others have warned of the potential dangers of doing so. In this context, and based on empirical observations in both Australia and the United Kingdom, Morrison-Saunders and Fischer (2006), for example, urged for some caution when advocating full integration of different assessment aspects in the absence of any strong empirical evidence that more balanced decision-making will indeed occur as a result of this integration. Empirical evidence for the need to be cautious when attempting to integrate different aspects through SEA has recently also been generated by Therivel and Fischer (2012) as well as Tajima and Fischer (2013) for English spatial planning practice where the instrument is applied within the overall framework of sustainability appraisal. They found

Ongoing discussion on integrating economic, social and environmental aspects in SEA

that here, environmental aspects kept being subordinated to economic aspects.

It is probably fair to say that a differential approach is now prevailing, where it is widely accepted that the specific context within which SEA is applied needs to be considered before deciding on the specific format of SEA. A range of aspects are thought to be important for determining the most effective way of SEA application, including in particular those shown in Box 5 (following Fischer, 2014).

The specific context in which SEA is applied needs to be considered for the specific format of the SEA

Box 5: Aspects for effective SEA application

- **The specific decision tier:** there is some evidence to suggest that the likelihood of achieving effective integration of different aspects is connected with the specific decision-making tier, mainly because of existing experiences and traditions. Whereas, for example, at programme levels, in many systems traditionally different aspects have been integrated through cost–benefit analysis (CBA) and multicriteria analysis (MCA) in the sense of forcing heterogeneous entities into a common metric, in statutory spatial planning, the purpose of impact assessment instruments has often been to highlight implications of development options in terms of specific issues, for example, the environment (usually including some health aspects), the economy and others. Finally, policy level assessments have tended to integrate different aspects more fully, the main reason being a more open approach to different futures of those involved at this level, which is often perceived to be more abstract and distant (and thus less subject to powerful interventions by those with vested interests).
- **Distribution of power:** in the presence of an unequal distribution of power in decision-making processes, it has been suggested that the best thing SEA can do is to create transparency with regards to who (or what) wins and who (or what) loses. In this case, full integration of different assessment aspects in SEA may just lead to hiding trade-offs and could therefore be problematic. There may either be a case for keeping different impact assessments separate (including, for example, HIA) or for creating a set of strict trade-off rules.
- **The specific administrative level:** Different administrative levels (for example national, regional and local) are frequently given different tasks and responsibilities, which may mean specific options need to be dealt with at specific administrative levels.
- **Existence of a policy framework with compatible policy objectives:** Frequently, economic, social and environmental (including health) objectives of specific policy frameworks (including sustainable development strategies) have shown to be not fully compatible (see, for example, Connelly, 2007); if this is the case, integration of different aspects through SEA is problematic.
- **The institutional capacity to integrate:** even in the presence of a wish to integrate different substantive aspects, it may be difficult to do so, because:
 - in many systems, traditionally, different administrations are used (and possibly asked) to act autonomously and may find closer cooperation difficult;
 - the technical or financial capacity to deal with very different aspects all at once may also be limited; on the one hand, more aspects may mean that more data need to be processed; on the other hand, the treatment of a range of aspects in assessment may also mean having to manage the involvement of (potentially too) many people.

Overall, it is important to note that whilst a cautious approach is needed with regards to the integration of different aspects, in particular those that tend to dominate and those that tend to be subordinated to others, existing evidence suggests that integration of environmental and health (along with social) issues can result in overall positive health outcomes (see, for example, Tajima and Fischer, 2013 and the World Bank's Strategic Environmental and Social Impact Assessment approach; OECD, 2012).

A cautious approach is needed with regard to the integration of different aspects in SEA

Methods and techniques used and acting strategies of assessors

As explained above, in the early years of its development, SEA was seen as an extension of project EIA principles to the levels of policies, plans and programmes (Emmelin, 2006). As a consequence, EIA methods and techniques were also thought to be suitable for use in SEA. Many of these are, however, based on the identification of spatially concrete, and comparatively speaking, easily measurable impacts of proposed actions on existing land usage. Typical project EIA methods and techniques include, for example, field surveys, the use of indicators, (decision focused) checklists, matrices, networks, overlays, the calculation of quantitative mass balances of impacts, photographs and photomontages (see, for example, Belčáková, 2008).

The higher the level of strategic action, the less applicable project EIA based methods and techniques

In connection with the various debates on SEA over the past two decades, understanding of what methods and techniques may be suitable for use in SEA has also advanced. This has been closely connected with an improved comprehension on how SEA differs from EIA and also how different SEAs differ from each other. In this context, it has been established that the higher the level of the strategic action, the less applicable project EIA based methods and techniques might be. This means that, for example, a conceptual policy which aims at developing a broad development vision for a certain area will need a different set of methods and techniques (i.e. possibly one that is more discursive and qualitative) than, for example, a programme, which aims at ranking potential projects on the basis of, for example, multicriteria analysis or cost-benefit analysis.

It is therefore suggested that the choice of suitable assessment methods and techniques for health inclusive SEA is particularly connected with the specific tier of decision-making, i.e. whether it is applied to a policy, a plan or a programme. In this context, aspects to be considered for choosing suitable methods and techniques include the issues described in Box 6 (following Partidario & Fischer, 2004).

The role of the assessor also depends on the context

In line with the different situations described above, the roles of the assessors (and their acting strategies) are also likely to differ (see Fischer, 2003). In project related and structured situations, the assessor is more likely to act as a problem solver. Furthermore, if there is consensus on goals, the assessor may also act as an advocate of those. In more strategic situations with high degrees of uncertainty, an assessor is likely to act as a problem recognizer. Finally, if an assessment is striving to integrate different aspects, the assessor may also act as a mediator of different interests (see, for example, Runhaar & Driessen, 2007; Fischer et al., 2010).

Box 6: Aspects to be considered for choosing suitable methods and techniques

- **Time scales:** the more strategic the initiative is, the more likely is it to be removed from project action; therefore, a longer time perspective on likely impacts needs to be applied with increased uncertainties and increasingly less predictable futures.
- **Types of data:** At higher levels of decision-making, assessment issues are frequently not readily quantifiable, but are of a more descriptive nature; methods and techniques used will therefore often be of a more qualitative nature; where quantitative methods are used, they need to allow for the consideration of possible ranges of impacts (i.e. in terms of high and low potential impacts), rather than trying to calculate precise figures.
- **The level of certainty:** Based on longer timescales and the lack of readily quantifiable, precise data at higher decision-making tiers there is less certainty in assessment. As a consequence, even the prediction of direct effects can be difficult, notwithstanding the problems involved in attempting to anticipate indirect effects.
- **Types of impacts:** Whilst project related decisions usually have concrete spatial, localized impacts, policy related decisions may give rise to more spatially undefined impacts and therefore may be of a more regional, national or even global scale (for example impacts of tax policies on future CO² emissions); furthermore, the cumulative nature of impacts is likely to be greater the further away an assessment situation is from individual project decisions.
- **The problem of consultation and participation:** Higher decision tiers are often perceived by the public as vague and distant when compared with more reactive project situations (in which "not in my backyard" attitudes may trigger high levels of interest and involvement); in this context, methods and techniques need to help facilitate effective consultation and participation.
- **Alternatives:** the more policy oriented a situation is, the more abstract and area wide the alternatives to be considered are likely to be; reliability of predictive methods and techniques is therefore likely to be lower and they should not pretend to be more precise than they actually are.

Ultimately, acting strategies can be connected with the contingency model of organizational decision-making, as first developed by Thompson and Tuden in 1956. They described decision-making models in terms of means and ends uncertainty (uncertainty about how and why to take a course of action). As a consequence of the observed levels of uncertainty, they made suggestions for how organizations may want to act, ranging from computation over judgement and bargaining to inspiration. Fig. 2 summarizes current thinking with regards to various contextual issues influencing the specific format of SEA, as discussed in this section.

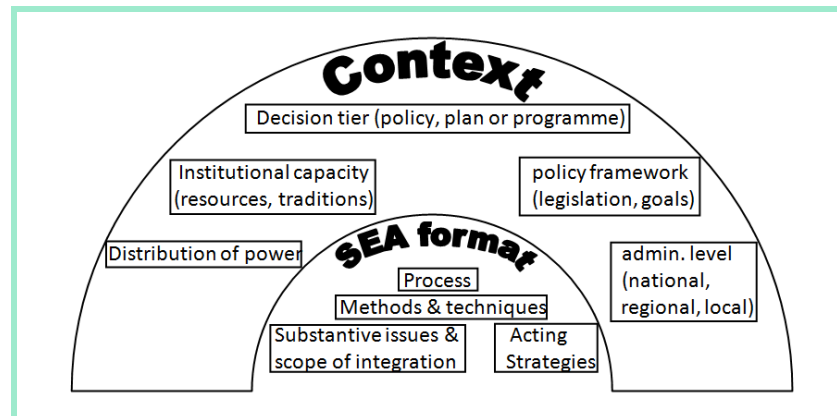
Acting strategies can be connected with the contingency model of organisational decision making

Health in SEA: current requirements and conceptual thinking

This section is divided into two subsections. Firstly, the role of health in environmental protection/legal requirements and rules is explored. Secondly, the conceptual thinking behind the inclusion of health in SEA is elaborated on.

Fig. 2: The format of SEA as determined by contextual factors

Source: the author



Environmental protection and legal requirements and rules – the role of human health

Legal rules on environmental issues are up to several thousands of years old and are very closely connected with human health, for example, with regards to the availability of pure water. In modern times, the first pieces of environmental legislation in many countries had a health based rationale. Examples include the United Kingdom Public Health Act from 1848, which is widely regarded to be the first piece of environmental protection legislation in modern Europe. This aimed at combating filthy urban living conditions, one of the effects of the industrial revolution.

Public health and the state of the biophysical environment are now considered to be inextricably linked. Health features in most environmental legislations world-wide, mostly with regards to the need for a clean (i.e. healthy) environment which should not negatively impact on (physical) human health. It is within this context that SEA frequently addresses human health as an important issue to be considered at those levels where action can be pro-actively influenced, i.e. at the levels of policies, plans and programmes.

However, aspects that are connected with the biophysical environment only cover parts of what is important. Mental health and social well-being are other important issues that also need to be considered. This was already acknowledged in the now over 65 year old definition of health by WHO:

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 1946).

Public health and the state of the biophysical environment are considered to be inextricably linked

So whilst environmental legislation related to, for example, sanitation, air and water quality is vital for the protection and improvement of human health, it only partly addresses the broad spectrum of health determinants. This is essential for SEA, as evaluations of impacts in SEA are often done on the basis of environmental protection legislation. However, it is important that neither NEPA nor the SEA Directive or the UNECE SEA protocol suggest that it is only biophysical aspects of health that should be considered. As a consequence, awareness that health determinants and outcomes other than those directly connected to the physical environment should be considered is growing in the SEA community.

SEA and health – conceptual thinking

As explained above, human health is an integral part of the different substantive aspects to be considered in SEA, disregarding of its substantive focus, which may be a narrow, environmental focus or a wider sustainability focus. This is frequently acknowledged in SEA legislation and guidelines world-wide. In this context, WHO has committed itself to support the improved consideration of health in SEA, for example, through its London and Budapest ministerial conferences on environment and health. In the Budapest Declaration, for example, health was explicitly mentioned as being an integral part of SEA (WHO Regional Office for Europe, 2004).

It is also important to note that in national legislations and guidelines as well as in international declarations, the connection between the environment and health, if covered, is not normally reduced to its physical components, i.e. other social and behavioural aspects are not explicitly excluded. However, it appears that in practice, in many countries, the main focus of SEA is often on physical aspects. Therefore, an important question for SEA is whether and how it should widen its scope to consider other important determinants of health. As a starting point, this requires the development of a better conceptual understanding of what health relevant issues may need to be covered in SEA.

Based on the evidence generated to date it is important to note that the range of substantive issues covered will, at least to some extent, depend on the policy, plan and programme to which the instrument is applied, as the scope of assessment is inextricably linked with the remit and issues to be covered of the action it is assessing. For example, a research study conducted in 2011 on SEAs of English municipal waste management strategies found that the risks of different waste management options to human health (i.e. potential negative health impacts) were addressed rather well (Fischer et al., 2011). Another study conducted a year earlier, using the same research approach and looking at English spatial plan SEAs, on the other hand, established that human health impacts were addressed comparatively poorly (Fischer, 2010). Whilst this certainly does not mean that spatial plans do not pose potential threats to human health, their identification for different waste management options is likely to be more obvious and straightforward, as associated impacts (in terms of, for

Health determinants and outcomes other than those directly connected to the physical environment should be considered

WHO is committed to support the improved consideration of health in SEA

Connection between environment and health is normally reduced to biophysical components

There is a need to develop a better conceptual understanding of what health relevant issues need to be covered

It is important to stay realistic on considering what is doable and what is not

Important health determinants

Almost every planning decision potentially affects human health

example, pollutants to air and water) are bound to be more direct. Whilst indirect effects should always be considered in SEA, in reality this is often difficult. This means that in reality there may be a discrepancy between the wish to consider all kinds of impacts and the ability to do so. What is important here is to stay realistic on what is doable and what is not, considering both, data and technical resources.

In order to be able to determine the extent to which health is considered in SEA, a suitable evaluation framework is needed. In this context, determinants of health which can potentially be addressed through SEA have to be identified. Determinants of health were first summarized in a model by Whitehead and Dahlgren (1991), which was subsequently developed further by Barton and Grant (2006). This model is linked to spatial scales, ranging from the global ecosystem and the natural environment over the built environment and the local community/economy to individual determinants (age, sex, hereditary factors) and lifestyles.

Important health determinants are therefore connected with

- a. biophysical,
- b. social,
- c. economic,
- d. behavioural and
- e. other “fixed” personal physical attributes.

Whilst it is possible to influence (a) to (d), personal physical attributes are not normally changeable. However, it is still possible to exert an influence on associated health implications. For example, a person with hereditary high blood pressure and heart problems may alleviate potential impacts by exercising regularly. As the built and natural environments can either encourage or discourage certain exercises (such as cycling or walking to work), health determinants can be influenced through policies, plans, programmes and their associated SEAs and behavioural aspects are thus important.

Following on from this, it is clear that new development can influence health through multiple pathways (Curtis et al., 2002; Thomson et al., 2006). The realization therefore that spatial planning can have an impact on human health, or as Kørnø (2009:60) put it: *“almost every planning decision potentially affects human health”*, has given rise to a rich body of work in this area. In this context, guidance has been prepared, for example, in the United Kingdom (SPAHG, 2011; TCPA, 2010). Elements that are of particular importance include, for example, the spatial set-up, which can influence physical activity (Burns & Bond, 2008). This influence may occur in different ways, for example, through the provision of green space, the mix of different uses and accessibility by foot and bicycle. Importantly, housing and its design affect all determinants of health. In this context, Marmot et al. (2010:30) argued that *“planning, transport, housing, environmental and health systems [should be fully integrated] to address the social determinants of health in each locality”*.

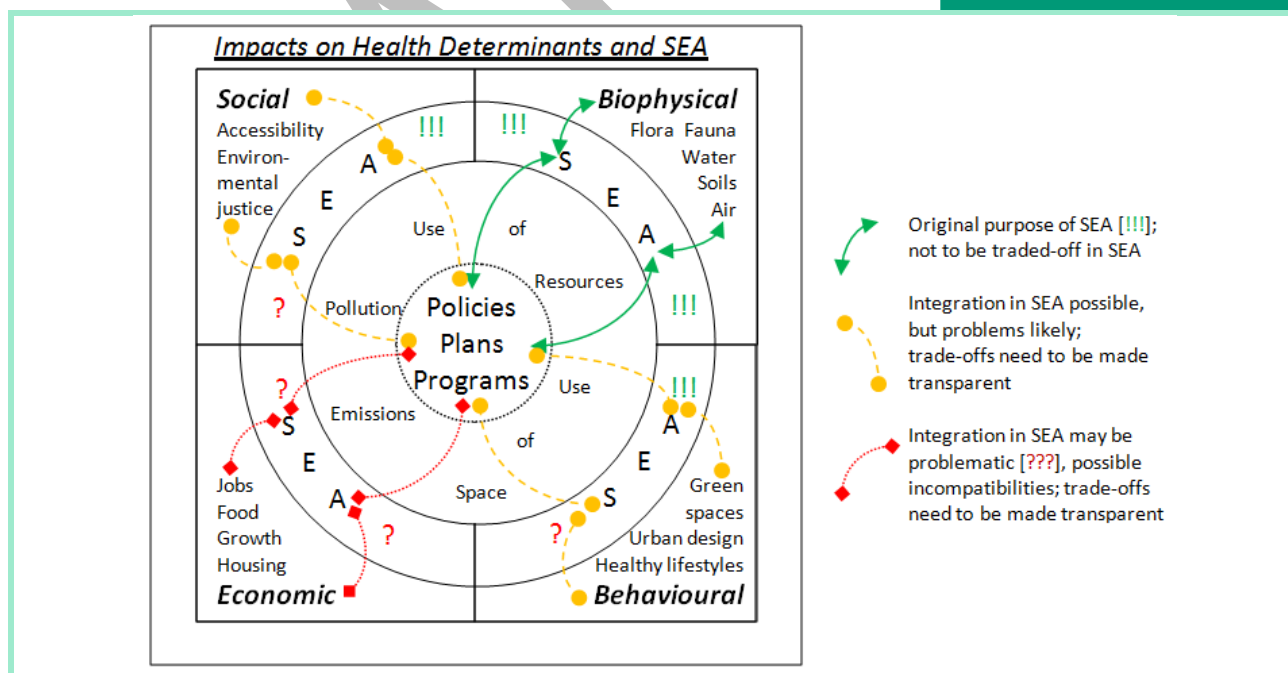
In addition to design issues, there are other health related aspects spatial planning can influence. For example, it is now commonly accepted that crime rates — which are connected with health in communities — can be influenced by urban design (Cozens et al., 2005). Furthermore, transport and spatial planning are inextricably linked (Fischer, 2002). In this context, besides some obvious physical aspects, such as noise and other emissions, health related aspects that are important include, for example, access to health care, jobs and sports as well as physical fitness facilities (Hilbers, 2008).

Because of the connections described above, SEA can play an important role for improving the consideration of health in spatial and other sectoral plan making (see, for example, Carmichael et al., 2012). Whilst in theory at least, nothing should keep SEA from supporting the consideration of various health aspects in policy, plan and programme making, whether this is happening in existing practice has been researched in a few studies only. Fig. 3 provides for a conceptual idea of how health determinants should be approached, if addressed in SEA.

SEA can play an important role for improving the consideration of health in planning

Fig. 3: Approaching the consideration of health determinants in SEA: a conceptual model

Source: the author



What is important is that whilst in principle, all important health dimensions can be considered, the adoption of broad health models may entail the consideration and discussion of controversial, difficult-to-measure issues such as well-being, quality of life or perceived health. This in turn may generate problems in terms of management of opinions, interests and values, which may conflict, in particular with aspects that are connected with economic growth. In this context, the extent to which SEA

The extent to which SEA engages in making trade-off decisions should be carefully evaluated

Role of SEA would be to weight impacts of different options and give recommendations for the most environmentally sustainable solutions

Health impacts are better considered in SEA than EIA but there is scope for improvement

engages in making trade-off decisions should be carefully evaluated, against the existence of clear trade-off rules and considering the presence of powerful interests. Whilst the main role of SEA has been seen by some as being an instrument of power mediation, there is currently no empirical evidence that this can be successfully achieved. Therefore, a cautious approach to integration should be taken (see, for example, Devlin & Yap, 2008).

It is acknowledged at this point that incompatibilities might not only be in existence between different health determinants, but also amongst them. Regarding biophysical environmental aspects, for example, climate change mitigation and adaption measures may turn out to be incompatible (see, for example, Moser, 2012). However, here, an important role of SEA would be to weigh impacts of different options and to give recommendations for the most environmentally sustainable solutions.

Empirical evidence for the consideration of health in SEA

In this section, firstly the existing body of literature is briefly introduced before the emerging empirical evidence is outlined. Furthermore, facilitating factors and barriers for an effective consideration of health in SEA are identified.

Existing body of literature

To date, there have only been few studies explicitly looking at the empirical evidence for the consideration of health in SEA. These have mostly not limited their scope to biophysical health aspects, but also considered social and behavioural aspects. Carmichael et al. (2012) summarized the literature on the integration of health into urban spatial planning through impact assessment and Bond et al. (2012) reflected on "the separation of spatial planning and health planning" and the associated roles of SEA and HIA. Furthermore, Douglas et al. (2011) reflected on how well health was being considered in Scottish SEA practice, suggesting that health impacts were better considered in SEA than EIA, but that there was scope for improvement. Also, in 2011, Schmidt looked at the consideration of health and climate change in United Kingdom and German spatial plans and associated SEAs. A year earlier, Nowacki et al. (2010) reflected on health in SEA guidelines and Fischer et al. (2010) explored the consideration of health in eight SEAs from Austria, the Czech Republic, England, Germany, the Netherlands and Wales. Five of these were spatial plan related with the other three being from transport, waste management and economic development planning. Furthermore, in 2008, Fischer looked at the existing evidence and the potential of SEA to address health impacts. Finally, in 2006, Tomlinson established the extent to which health was considered in SEA of local transport plans in the United Kingdom.

Some more conceptual papers on the integration of health in impact assessment were provided by Morgan (2011:40), who argued from a New

Zealand perspective in favour of bringing “*health concerns into formal impact assessment processes*”, and by Wright et al. (2005) who discussed whether coupling of HIA and SEA would be the best way forward. Furthermore, Mindell and Joffe (2003) looked at the linkages between HIA and other impact assessments, amongst which SEA. Finally, in 2001, WHO released a report on the potential linkages of HIA and SEA (Breeze & Lock, 2001).

In addition to the above, there is also an emerging body of work on the connections of spatial planning and health which is of direct relevance for SEA. Barton (2009), for example, looked at the connections of land use planning and health and well-being. Furthermore, Kørnø (2009) evaluated Danish guidance and practice on healthy spatial planning and, in this context, considered the role of SEA. Earlier, Burns and Bond (2007) provided an overview of the extent to which health features in United Kingdom spatial plans, also looking at the potential role SEA may play.

Emerging evidence on the consideration of health in SEA

What is clear from those works that have looked into the consideration of health in SEA is that in current practice, the only aspects that consistently feature are those that are of a biophysical nature. This includes in particular issues surrounding soils, climate, air, water, flora, fauna and biodiversity. SEAs also normally routinely consider issues such as noise and light pollution, vibration and smell. Furthermore, most SEAs consider some other non-physical health aspects, including those related to human behaviour, connected with, for example, food provisions and services or leisure facilities.

What aspects are considered in a specific SEA depends very much on the specific context, which may differ for different sectors of application. Furthermore, the institutional setup is important. English spatial plan SEAs, for example, consistently consider a range of social and economic aspects. This is not surprising, as SEA is applied here within the overall context of sustainability appraisal. Reasons for why certain aspects are/are not considered differ. Fischer et al. (2010), for example, found that whilst English SEAs usually considered economic and social aspects, these were not normally covered in German and Dutch local spatial plan SEAs. However, in the German case, many municipalities were found to prepare separate development plans on various health issues which are the responsibility of other authorities. This means that spatial planning and health planning are done separately, rather than being integrated. In Dutch practice, a range of socioeconomic aspects are covered in local spatial plans. However, subsequently these are not assessed in SEA. This appears to be connected with a more narrow interpretation of what types of health impacts should be considered in SEA here. Also, and interestingly, in English transport planning, opposite to spatial planning, SEA rather than sustainability appraisal is applied and here, socioeconomic aspects are considered to a much smaller extent. Issues that are considered include

*In current practice only
biophysical aspects
consistently feature in SEAs*

*What aspects are considered
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specific context*

*Only few SEA guidelines
internationally fully
considered non-physical
health aspects*

accessibility with regards to social exclusion and physical health impacts of transport, in particular with regards to noise and other emissions (see Tomlinson, 2006). These findings are hardly surprising, though, in the light of the findings by Nowacki et al. (2010) who established that only a few current SEA guidelines internationally fully considered non-physical health aspects.

Regarding the extent to which specific determinants of health were considered in SEA, Schmidt (2011) in his study on United Kingdom and German spatial plan related practice found that the three most frequently considered were:

- In the United Kingdom: *“access to and availability of health facilities”, “green infrastructure/open space” and “leisure and recreation facilities”*.
- In Germany: *“noise”, “air quality and pollution” and also “leisure and recreation facilities”*.

Whilst more social health determinants were considered in English sustainability appraisal based SEA practice, despite of the above mentioned separation of health and spatial planning, German plans and their SEAs still considered some non physical health determinants, such as quality of life, accessibility to public transport and a *“humane environment”*. Regarding trends on the consideration of health in SEA over time, the same author also showed that there was a steady increase in the number of times health was mentioned in both, English and German spatial plans and their SEAs. Whilst quantification of impacts was not often attempted in English practice, this was routinely done in German SEAs. This is connected with the more specific land allocation orientation of spatial plan making here.

Finally, with regards to Danish practice, Kørnøv found that overall, health aspects were only poorly considered in 100 environmental reports (i.e. SEA reports) of municipal plans. Noise, traffic security, drinking-water, air pollution and recreation/outdoor life were the most extensively considered determinants. However, only noise was actually represented in over 70% of environmental reports with the other aspects featuring in less than 50% of them. Many other determinants were not considered at all, and most of those that were considered were usually transport related.

Facilitating factors and barriers for the effective consideration of health in SEA

Regarding facilitating factors and barriers for the consideration of health in SEA, based on the evidence established so far, it is clear that there do not appear to be any differences between health and other assessment aspects, including, for example, biodiversity or climate change. Facilitators and enablers can be divided into those connected with the process of a specific SEA and those connected with the overall context within which the instrument is applied. The former include the application of a suitable assessment procedure (EIA based/non-EIA based) and the use of suitable

Facilitating factors and barriers for health consideration are not different to other assessment aspects in SEA

methods and techniques. The latter include provisions for the consideration of health, a clear understanding of the issues to be addressed and the roles of those involved in assessment, clear ideas about the expectations and values of stakeholders and their effective involvement in SEA, as well as issues of appropriate funding, time and support (see Bina, 2008; Fischer and Gazzola, 2006; Fischer, 2005; Marsden, 1998).

Similarly to the above, Nowacki et al. (2010:13) suggested that facilitating factors for effectively considering health in SEA were linked with institutional, methodological and procedural aspects.

Institutional aspects were said to include effective links between proponents and health authorities, a meaningful involvement of health professionals and other stakeholders as well as effective support by a dedicated body (i.e. with regards to health a health authority or an equivalent body). *Methodological aspects* were said to include an effective distinction between (health) aspects that should always be considered and those that should only be considered at times or in certain sectors, the availability of data from authorities and other bodies and their effective integration in SEA, as well as the definition of meaningful indicators and integrated monitoring systems. Finally, *procedural aspects* were said to include the application of SEA as an instrument that aims at achieving consistency of aims, objectives and actions of different sectors and tiers, an effective coordination with other assessment tools, a pro-active approach (i.e. anticipating developments and impacts), the consideration of social, behavioural, physical and ecological factors of health early on in the process, the consideration of data from different sources, and the effective use of dedicated resources (for example guidance), which considers health.

Regarding the effective involvement of health professionals, Bond et al. (2013) suggested that spatial planners are frequently ill-equipped to deal with health and that the health profession rarely engages in spatial planning processes (frequently these are actually not statutory consultees). In this context, they suggested that the separation of functions between different professions was a particular serious problem, something which was also observed by Fischer et al. (2009) for German local spatial plan related SEA practice. Finally, Carmichael et al. (2012) summarized a number of barriers to the effective consideration of health in SEA. They suggested that these include aspects of knowledge, partnerships, management and resources. Knowledge aspects are connected with different conceptual understandings of health by different stakeholders. These may, for example, think of health more in terms of a narrow rather than a broader definition. Partnerships' aspects determine the extent to which stakeholders are able to effectively engage with the SEA process. They suggest that this may be connected in particular with the specific cultures of different disciplines. Finally, management and resources related aspects are said to be connected with an ability to coordinate different appraisal processes. This includes both, the technical (management) ability and the necessary (time, technical and monetary) resources.

Facilitating institutional, methodological and procedural aspects

Health professionals rarely engage in spatial planning processes

Knowledge aspects are connected with different conceptual understanding of health by different stakeholders

Health already plays an important role in SEA

Biophysical aspects are routinely considered in SEA practice globally

Shortcomings with regards to the consideration of health

Getting health stakeholders engaged in SEA process is key

Integration of different environmental, social and behavioural health determinants need to be approached with care

Conclusions

There can be no doubt that health already plays an important role in SEA. The United States NEPA includes requirements on the consideration of health in environmental assessment. Furthermore, the European SEA Directive requires all EU Member States and the SEA (Kiev) protocol to the Espoo Convention asks all its signatories to explicitly address health in SEA and to consult with health authorities. Finally, development banks and organizations frequently ask for health to be addressed in their SEAs. As a consequence, biophysical determinants of health are already routinely considered in SEA practice globally. However, this is currently happening in a fairly general way only, without distinguishing between, for example, specific population groups. Depending on the specific context and policy, plan or programme making system within which SEA is applied and the sector of application, other determinants of health (social and behavioural) are also considered, albeit less frequently. Whilst the consideration of health does not mean resulting PPPs are automatically “healthy”, based on the empirical evidence emerging, it is safe to assume that SEA can lead to its improved consideration, mostly to a moderate extent (Carmichael et al, 2012; Schmidt, 2011; Fischer et al., 2010).

A number of shortcomings have been observed with regards to the consideration of health in current SEA practice. Importantly, in many SEA systems, health stakeholders do not get engaged in SEA processes. One reason is that frequently they are not statutory consultees. Another is that health professionals are often uncomfortable to getting involved, as SEA is not a platform they are familiar with. Furthermore, spatial and other policy, plan and programme makers often appear to lack understanding of health issues and may, as a consequence only consider biophysical determinants of health. Getting health stakeholders involved in SEA and increasing capacity amongst policy, plan and programme makers and assessors is therefore key to improving practices. Finally, it is important that despite of the rapidly growing practice of SEA globally, empirical evidence produced so far for health and SEA is still thin and that only a tiny fraction of the now substantial body of professional literature on SEA explicitly deals with health.

Whilst integration of different environmental, social and behavioural health determinants in SEA is possible, empirical evidence suggests that this may need to be approached with care, in particular when there are tensions between, for example, economic growth objectives on the one hand and environmental and social issues, on the other. In certain situations, different assessment aspects are probably better kept separate (for example in dedicated assessment instruments) rather than being fully integrated in SEA. An important reason for applying a cautious approach is power differences between the various contributors to an “integrated” SEA. For example, integrating transport assessment into SEA in the presence of a powerful road building lobby is unlikely to result in reduced environmental

impacts from less road construction. In the absence of strong vested interests, however, integration of different impact assessments may be more unproblematic. Furthermore, problems may be reduced in the presence of formally established trade-off rules. Another important barrier which may be in the way of effective integration includes technical, human and financial resource limitations. Finally, responsibilities for health issues may not be with the authority preparing a specific policy, plan or programme, but may lie with a different body which possibly prepares their own policies, plans and programmes. In this case, achieving effective coordination is important. However, if institutional barriers are high, even this may already be a challenge. Despite of these potential barriers, it is important that integration can succeed, though, if those contributing to SEA are open to different outcomes.

Whilst there are various problems of current practices with regards to the effective consideration of health, most of these are actually not specific to health, but are generic, applying to all substantive aspects considered in SEA. They include in particular an only moderate impact on policy, plan and programme making, an inability to pro-actively identify reasonable alternatives, and a lack of capacity to successfully address cumulative and indirect impacts. Furthermore, in particular at higher tiers of decision-making (i.e. policies), it is often difficult to get stakeholders and the public to engage in assessment, as the issues at stake are often thought of as being abstract and remote.

Overall, however, SEA is an instrument which can work effectively towards a better consideration of health in policy, plan and programme making, not least because “environmental reports require collecting and presenting data from various sources, which would otherwise not exist” (Schmidt, 2011:105). Also, requirements to consider health through SEA have shown to make policy, plan and programme makers and assessors reflect on issues that they otherwise would not have. Whilst in current practice globally, it is mainly the biophysical determinants of health that are advanced through SEA, social and behavioural determinants may also be included. However, this is only likely to become more widespread in the presence of associated government policy, legal mandates or official guidance (Bond et al., 2013).

Barriers for integration of the different health determinants

There is only a moderate impact on policy, plan and programme making of SEA

SEA is an instrument which can work effectively towards a better consideration of health in policy, plan and programme making

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